

Applicant : Hartley Owen  
Filed : 07/16/2003  
TC/A.U. : 1764  
Examiner : Unknown

Docket No. : RDS01

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Commissioner for Patents  
P.O. Box 1450  
Alexandria VA 22313-1450

### **INFORMATION DISCLOSURE STATEMENT**

Sir:

This IDS reviews the problem, the invention and the closest art known.

#### **PROBLEM – THERMAL CRACKING IN A CATALYTIC CRACKER**

FCC units have evolved to use all riser cracking, with cyclones on the riser outlet to rapidly separate cracked products from spent catalyst which was sent down to the stripper. Stripping steam recovers additional cracked product from spent catalyst, but the stripper vapor spends a long time in the reactor vessel and thermally cracks. The reactor vessels are large and the stripper vapor residence time is excessive, because many of the vessels were sized to handle both vapor from the riser and the stripper. Closed cyclones improved yields from the riser and created an unwanted thermal cracking zone above the stripper.

#### **THE SOLUTION – AN INVERTED SNORKEL**

Inventor Owen devised a way to get stripper vapor out of the reactor vessel quickly, to reduce thermal cracking. The device operates like an upside down snorkel, quickly removing cracked product from above the stripper, minimizing thermal cracking. The snorkel solves another problem in FCC units, a vapor removal device which can withstand huge temperature swings and years of “sandblasting” in the FCC unit. The snorkel can be attached to, or be part of, the primary cyclone.

THE ART:

Closed cyclone systems were developed and/or used by most refiners. US 5,055,177, Haddad et al is a good closed cyclone design.

Riser quench, in which feed and/or catalyst enter the reactor extra hot, and the riser contents quenched in transit, allows catalytic cracking to occur at high temperature, and reduces temperature to reduce thermal cracking downstream of the riser. This reduces, but does not eliminate, thermal cracking. US 4,818,372 and US 5,389,232 disclose riser quench .

Post riser quenching is disclosed in US 4,978,440.

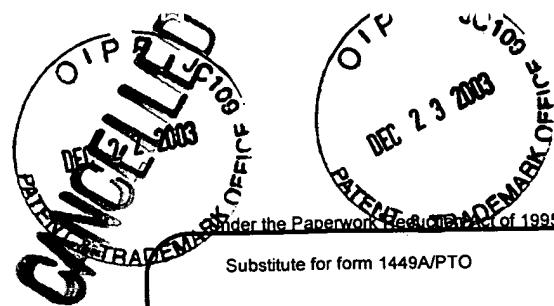
A stripper cap disclosed in US 4,946,656 isolates the FCC stripper to facilitate removal of stripper vapor. Thermal cracking is still a problem for stripper vapor passing through the cap of the stripper into the reactor vessel. '656 recognized some of the problem (thermal cracking of stripper vapors) but provided only a partial solution with an approach which could be hard to implement, mechanically, in an FCC.

Early action is respectfully solicited. If the Examiner believes patentable subject matter is present, but there are concerns about claim language, a telephone interview is invited.

Respectfully submitted



Richard D. Stone  
Reg. No. 27,598  
Tel.: (504) 367-1933 or Cell # (504) 352-2494



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## **INFORMATION DISCLOSURE STATEMENT BY APPLICANT**

**(Use as many sheets as necessary)**

## Sheets

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### ***Complete if Known***

Application Number	10/621,197
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First Named Inventor	HARTLEY OWEN
Art Unit	1764
Examiner Name	
Attorney Docket Number	RD501

## U. S. PATENT DOCUMENTS

## FOREIGN PATENT DOCUMENTS

FOREIGN PATENT DOCUMENT						
Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document Country Code <sup>3</sup> Number <sup>4</sup> Kind Code <sup>5</sup> (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T

Examiner Signature		Date Considered	
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Translation is attached.

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